

(19) World Intellectual Property
Organization
International Bureau



556 521

(43) International Publication Date
10 September 2004 (10.09.2004)

PCT

(10) International Publication Number
WO 2004/077016 A2

- (51) International Patent Classification⁷: **G01N**
- (21) International Application Number:
PCT/US2004/005133
- (22) International Filing Date: 21 February 2004 (21.02.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/449,080 22 February 2003 (22.02.2003) US
- (71) Applicants and
(72) Inventors: LABOWSKY, Michael, J. [US/US]; 5 Highview Court, Wayne, NJ 07470 (US). FERNANDEZ DE LA MORA, Juan [US/US]; 80 Cold Spring Street, New Haven, CT 06511 (US).
- (74) Common Representative: LABOWSKY, Michael, J.; 5 Highview Court, Wayne, NJ 07470 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

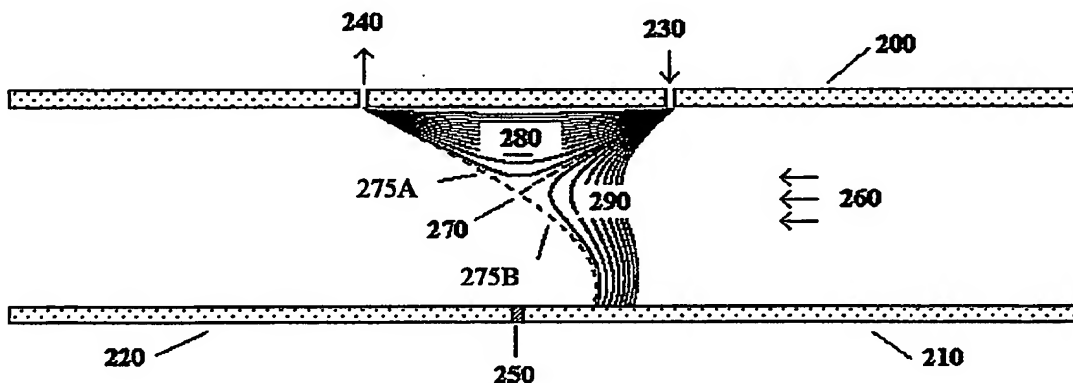
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ION MOBILITY SEPARATION DEVICES



(57) Abstract: The invention describes a system and method to separate ions (and charged particles) suspended in gas based on their ion electrical mobility. Most common ion mobility analyzers involve two parallel plate (or concentric cylinder) elements (electrodes) between which is imposed an electrical field perpendicular to a sheath gas flow field between the cylinders. Separation occurs because high mobility ions tend to follow the electrical field while low mobility ions tend to follow the flow field. This invention describes various configurations of electrical elements and sheath gas flow fields for ion mobility separation devices with unique performance characteristics. These characteristics include devices in which: the ion inlet and outlet are on the same element; the inlet and outlet are at the same voltage; the outlet is upstream from the inlet; the outlet is on the axis; the inlet is on the axis; and the ions are focused on the outlet.

WO 2004/077016 A2